

Space News Roundup

Vol. 26 No. 19

September 25, 1987

National Aeronautics and Space Administration

Disney team to 'imagineer' new visitors center

Walt Disney Imagineering will design a new, world-class visitor center at JSC for the privately funded, non-profit Manned Space Flight Education Foundation, Inc., foundation officials announced Sept. 21.

Phase I of the facility is expected to cost \$40 million to \$60 million, draw 2 million to 3 million visitors annually and contribute significantly to the Clear Lake economy.

"Today marks the very beginning of our project," said Harold S. Stall, JSC Public Affairs director and president of the foundation, as he announced the signing of the Disney contract. "We are a real, live organization doing work."

"Our facility will use state-of-the-art presentation techniques to stimulate, educate and enliven the world's imagination for manned space flight. We are building an attraction that will share the excitement of space in the highest quality way," Stall said.

JSC Director Aaron Cohen, Houston Mayor Kathy Whitmire, U.S. Rep. Jack Brooks, Harris County

Judge Jon Lindsay, Friendswood Development Co. President John Walsh, and Walt Disney Imagineering President Martin Sklar joined Stall in making the announcement.

Sklar said Disney hopes to create a facility that will "turn people on about the whole world and universe of space." Patrick Scanlon, vice president of business affairs and planning, will lead the Disney team, he said, and Vance Stafford will be project manager.

The new center is expected to open in early 1991 on 123 acres inside and just west of JSC's main gate, Stall said. It will be financed through a combination of capital contributions and a long-term tax-exempt revenue bond issue that will be retired through affordable admission fees, merchandise sales and concession proceeds. Revenues from operations also will finance upkeep and upgrading of the facility.

Stall said the Manned Space Flight Education Foundation has secured from NASA exclusive rights to tell

(Continued on page 2)



JSC Director Aaron Cohen (above) listens as details of the Walt Disney Imagineering contract for design of a new JSC visitors center are revealed at a press conference in downtown Houston. Sitting at the table with Cohen are, left to right, Walt Disney Imagineering President Martin Sklar, Harris County Judge Jon Lindsay, Houston Mayor Kathy Whitmire, U.S. Rep. Jack Brooks, and Friendswood Development Co. President John Walsh. At left, Sklar, Walsh, Brooks, Lindsay and Whitmire discuss the project after the announcement.



Gibson to command crew of five for STS-27

Robert L. "Hoot" Gibson will be commander of a five-man crew aboard Atlantis for STS-27, a Department of Defense Space Shuttle mission scheduled for the early fall of 1988.

Joining Gibson on the flight will be Pilot Guy S. Gardner and Mission Specialists Richard M. Mullane, Jerry L. Ross and William M. Shepherd.

Gibson, an astronaut since 1978, was Pilot on STS 41-B in February 1984 and Commander of STS 61-C in January 1986. He has logged a total of 337 hours in space.



Robert L. Gibson

A U.S. Navy Commander, Gibson has logged over 300 carrier landings and more than 3,600 hours in over 35 types of civil and military aircraft. He was born Oct. 30, 1946 in Coopers-town, N.Y., but considers Lake-wood, Calif., to be his hometown.

Gardner, an astronaut since 1980, will be making his first space flight on STS-27. Gardner has worked in several areas of Space Shuttle development and support, including work as a CapCom and a chase pilot, and training for Shuttle launches out of Vandenberg Air



Guy S. Gardner

Force Base.

Gardner is a U.S. Air Force Lt. Colonel and has logged over 3,700 hours flying time, much of it in F-4 Phantom jets. He was born Jan. 6, 1948 in Alta Vista, Va., but considers Alexandria, Va., to be his hometown.

Mullane, an astronaut since 1978, flew as a Mission Specialist on STS-41D in August 1984. He has logged nearly 145 hours in space.

Mullane is a U.S. Air Force Colonel and flew 150 combat missions over Vietnam. He is a graduate



Richard M. Mullane

of the USAF Test Pilot School's Flight Test Engineer Course. Mullane was born Sept. 10, 1945 in Wichita Falls, Texas, but considers Albuquerque, N.M., to be his hometown.

Ross, an astronaut since 1980, was a Mission Specialist on STS 61-B in November 1985. During that flight, he participated in two spacewalks for a total of 12 hours EVA time in support of the EASE/ACCESS construction experiments.

Ross is an Air Force Lt. Colonel and has logged more than 1,300 hours flying time in 21 aircraft types.



Jerry L. Ross

He was born January 20, 1948, in Crown Point, Ind.

Shepherd, a NASA astronaut since 1984, will be making his first space flight on STS-27. He is a U.S. Naval Academy graduate and served with Underwater Demolition Team Eleven, SEAL Teams One and Two, and Special Boat Unit Twenty. He has completed the degrees of ocean engineer and has a master of science in mechanical engineering from MIT.

Shepherd was born July 26, 1949 in Oak Ridge, Tenn.



William M. Shepherd

NASA agrees with bulk of Space Station critique

NASA last week said it agreed with most of the findings and recommendations contained in a report on the Space Station Program issued by the National Research Council (NRC).

The report, issued Sept. 11 by the NRC's Committee on Space Station, addressed such issues as the Station configuration, program management, users needs and cost estimates.

An Agency statement said, "NASA is extremely pleased that upon reviewing alternative configurations for the Space Station, the Committee judged none to be as satisfactory as NASA's Block 1 baseline." The statement characterized that endorsement as "an important, independent validation of the Space Station design which has been thoroughly studied for over three years. It provides clear evidence to the Administration and Congress that the Station NASA is developing is of sound design and properly

balances fiscal restraint and program scope."

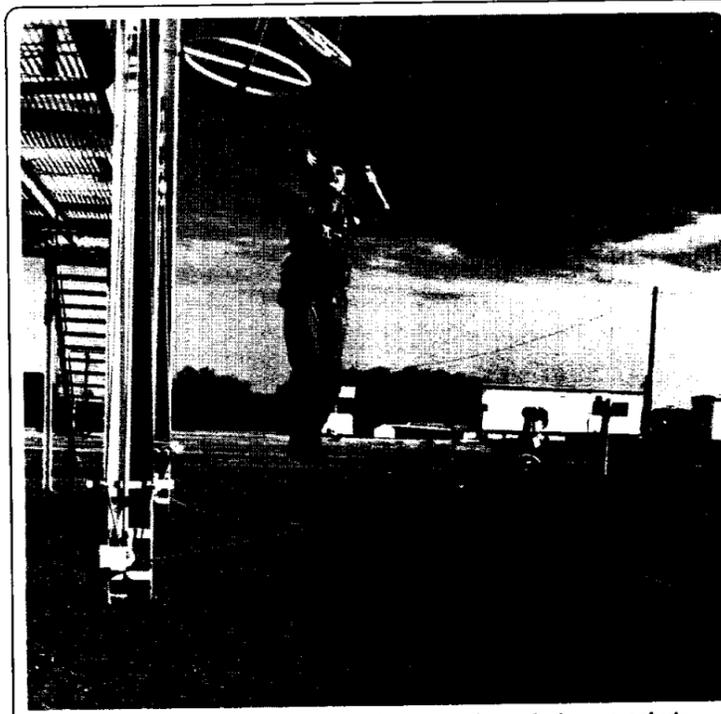
The Agency and the NRC disagreed, however, over issues relating to program risk and cost.

NASA said it did not agree with the Committee's contention that deployment of the Station using the Space Shuttle would be "risky." NASA said that finding did not reflect current planning, in which a modified assembly sequence would reduce the weight of the first and second Station payloads to be carried aboard the Shuttle.

That planning, NASA said, was "recently presented to the NRC and may not have been fully evaluated to permit incorporation into the final NRC report."

NASA also disagreed with the Committee's estimate that up to \$3.9 billion may be needed for back-up hardware and test program enhancements. That level of funding, NASA said, "is much too high."

(Continued on page 2)



Astronaut candidate James S. Voss hangs in there during parachute and parasail training at Vance Air Force Base, Enid, Okla. He and other candidates received T-38 egress training at Vance on Sept. 10 and 11. See Page 3 for a story and photos on their recent wilderness survival training.

Space Shuttle liquid booster designs studied

NASA has selected General Dynamics and Martin Marietta to negotiate for conceptual design studies of liquid-fueled rocket boosters proposed for use on the Shuttle and future launch vehicles.

The two contracts, each valued at approximately \$2.5 million, will involve nine-month parallel studies of both pressure-fed and pumped liquid fuel rocket boosters (LRBs). Both contractors will develop a recommended design for each system.

Marshall Space Flight Center will serve in a lead capacity on the project in cooperation with JSC, Kennedy Space Center and Langley Research Center. JSC will investigate the booster interface with the overall Shuttle system, while KSC will evaluate LRB effects on existing launch and vehicle assembly facilities and Langley will support evaluation of aerodynamic and aero-

(Continued on page 2)

People

Secretarial excellence is recognized

Maria C. Nooney, secretary to Procurement Director James L. Neal, has received the Marilyn J. Bockting Secretarial Excellence Award. Nooney is responsible for managing all functions of the director's office and serving as senior secretary for five division-level offices. She was specifically cited for her performance in handling a large volume of income mail and telephone calls that have increased significantly during the director's service as an officer in a national organization. Through outstanding proofreading, she recently noticed an increasing number of errors and inconsistencies in the preparation of procurement correspondence, and put together a series of correspondence and grammar review workshops for clerical staff. Procurement and other organizations have benefitted from the workshops through improved quality and productivity, and the sessions have been approved for Training Office credit.



Maria C. Nooney

Space News Briefs

RCA wins science payloads contract

JSC has selected RCA Government Services of Cherry Hill, N.J., for negotiations leading to award of a contract covering science payloads spacecraft, development, engineering and operations. The five-year, proposed \$46 million contract, starts Nov. 1 and runs through 1992. It is follow-on to a current RCA research and development contract. RCA will be responsible for Space Shuttle and Space Station science payload engineering, integration, planning, technical management, operational support and equipment acquisition.

Antarctic ozone project progresses

NASA and other scientists involved in the Airborne Antarctic Ozone Project report that at the halfway point, everything is working well. Dr. Robert Watson, NASA ozone project chief scientist, who just returned from several weeks at the aircraft mission operations base in Punt Arenas, Chile, reports that 21 instruments and both aircraft are performing well, and that the mission science team is pleased with the quality of data being returned. So far, an advanced high-altitude ER-2 aircraft has flown on eight occasions, and a specially modified flying laboratory DC-8 has flown six times, including once over the South Pole. A full report is expected to be available in the spring.

Bulletin Board

EAA offers Renaissance Festival trips

Two trips to the 13th Texas Renaissance Festival are being offered by the JSC Employee Activities Association on Oct. 17 and Nov. 7. The price of \$10 per adult, \$6 for children ages 5 to 12 and \$2 for children under 5 years old includes bus transportation to the festival and admission price. The schedule for both trips calls for the bus to leave the parking lot in front of Bldg. 25 at 9 a.m. and leave the festival grounds at 5 p.m. For the Oct. 17 trip, ticket sales end Oct. 9. For the Nov. 7 trip, ticket sales begin Oct. 13 and end Oct. 30. Festival admission only tickets may be purchased until Nov. 13 at a price of \$8 for adults and \$4 for children. There is a limit of 8 tickets per purchase, and tickets are available only at the Bldg. 11 Exchange Store.

Chamber Orchestra concert set for October

The Houston Symphony Chamber Orchestra will present its eighth annual fall concert at 8 p.m. Oct. 10 in the newly-remodeled auditorium of Clear Creek High School in League City. The chamber orchestra, consisting of approximately 30 principal members of the Houston Symphony, will present a program entitled "A Night in 18th Century Venice." The concert is being sponsored by the Bay Area Symphony League. Reserved seats are \$15 and are available from Norma Hays at 532-4318. General admission tickets are \$8 and are available at the University of Houston-Clear Lake ticket office, Dorothy Stall & Associates Realtors, both Pyburn supermarkets, the Clear Lake Chamber of Commerce, the North Galveston County Chamber of Commerce and League City Bank & Trust.

NARFE November meeting planned

The November meeting of the NASA Area Chapter of the National Association of Retired Federal Employees will be held Monday, Nov. 2 instead of on the usual first Tuesday of the month. The meeting will be held at 1 p.m. at the Harris County Park Bldg. on NASA Road 1. For more information, call Phil Hinton at 334-2455 or Burney Goodwin at 326-2494.

Influenza vaccine available at Clinic

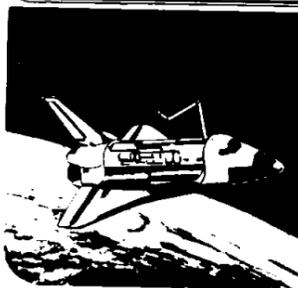
Influenza vaccine inoculations are available again this year at the JSC Clinic. Vaccinations are advised for high risk groups, such as people with heart disease of any type, chronic bronchopulmonary disease, diabetes and other chronic disorders. The vaccine will be available after Oct. 1 and will be given daily from 10 a.m. to noon and from 2 to 4 p.m.

'Peru's Golden Treasures' opens Oct. 2

A traveling exhibit of over 250 pre-Columbian Peruvian gold artifacts from the renowned Museo Oro del Peru in Lima will open Oct. 2 at the Houston Museum of Natural Science. The \$100 million collection, called "Peru's Golden Treasures," forms one of the most significant archaeological exhibits in the world. The collection will be on view from Oct. 2 to Jan. 3 in the Jones Gallery. Admission is \$4 for adults and \$2 for children under 12. The museum is located in Hermann Park across from Miller Theatre. For more information, call 526-4273.

NASA
Lyndon B. Johnson Space Center

Space News Roundup



The **Roundup** is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for all space center employees. **Roundup** deadline is the first Wednesday after publication.

Editor Kelly Humphries
Staff Writer Beverly Green

NASA helps fight California forest fires

NASA is assisting firefighters in northern California by providing remotely sensed data that shows where fires and other "hot spots" are located in large areas of burning forests.

The project is being coordinated through NASA's National Space Technology Laboratories (NSTL), the State of California and the National Park Service.

NSTL's Learjet has thus far acquired images covering more than 10,800 square miles over the fire areas. The mission activity began Sept. 8 after the Park Service requested NASA assistance in providing fire detection data. The aircraft is expected to provide

support as long as needed.

Data from the Learjet is being delivered to NASA scientists and firefighting personnel at the NASA Ames Research Center for immediate viewing so that firefighting efforts can be directed as required.

Dick Harrell, U.S. Forest Service liaison with the multi-agency coordinating effort at Sacramento, said, "The data provides, for the first time, a comprehensive picture of the fire situation in northern California. NASA's Learjet provides a perspective we have not had before and we have learned some things about how to use our aircraft and sensors from their support."

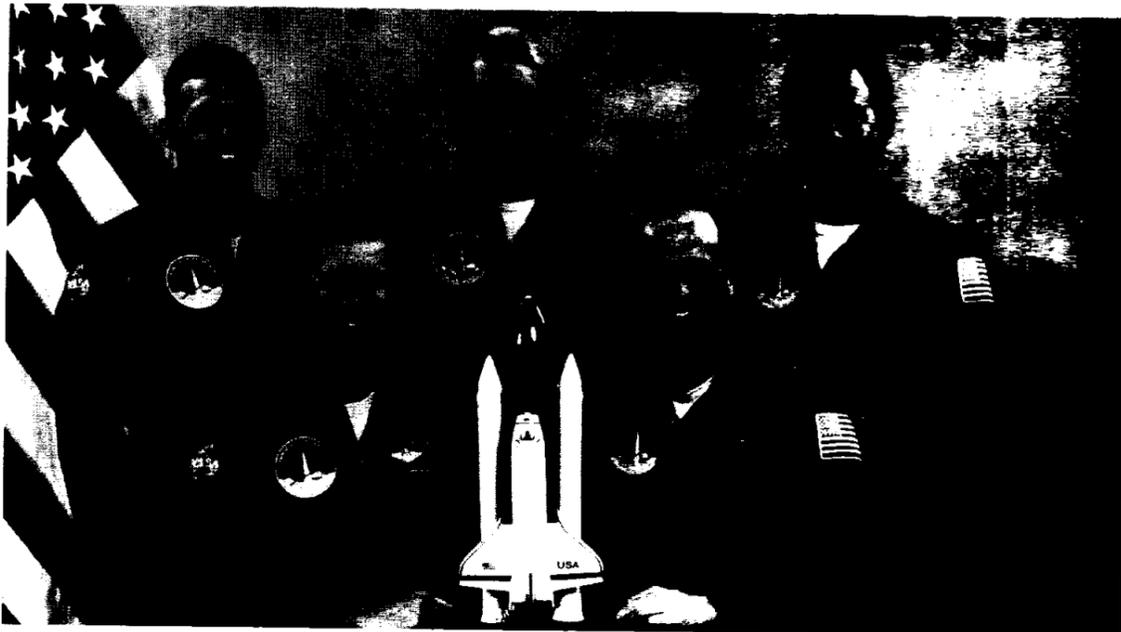
Harrell said data from the NASA

jet located small fires that firefighters did not know existed from their perspective on the ground.

The NASA Learjet was in the western states flying scientific missions when the request was made for emergency fire detection and location support.

The Learjet is equipped with a thermal infrared multispectral scanner, generally used by scientists and Earth resources planners for geological, agricultural and forestry applications.

Although the scanner was not designed especially for fire control, NASA officials say that it is "highly capable" of locating "hot spots" in the fire area.



The crew of STS-26 has released its official crew portrait. From left to right are Mission Specialist David Hilmers, Pilot Dick Covey, Mission Specialist Pinky Nelson, Commander Rick Hauck and Mission Specialist Mike Lounge.

Officials praise visitors center concept

(Continued from page 1)

the stories of manned space flight and JSC; the 123-acre site at JSC; an agreement to provide equipment, artifacts and photography; and access to the day-to-day business of America's space program through the astronauts, scientists and engineers working at JSC.

"They will be working with NASA to produce a first-class facility where people from all over the world can learn how astronauts work in space," Cohen said. "I believe it's important, not only for the nation's space program, but for Houston to have this facility."

Walsh, chairman of the foundation's finance committee, said that the Irene Cafcalas Hofheinz Foundation has contributed \$500,000 to help finance the initial conceptual design, and that a total of \$225,000 has been committed by First Republic Bank of Nassau Bay, CRS Sirine, Friendswood Development

Co. and the Vinson and Elkins law firm. He said the foundation is offering other interested parties to participate.

"The public has been, and is, solidly behind NASA. But they've had little opportunity in the past to share the excitement of space through a first-class educational and visitors center," said Congressman Brooks. "Thus, Houston's world center for manned space flight at JSC will provide a vital link to the world's view of America's space program. This ambitious private effort to finance the new center will, for NASA officials, reinforce Houston's commitment to retaining its leadership position in manned space flight programs. To American business, the visitor's center will highlight the fact that Houston is an ideal location for aerospace companies."

Whitmire said the project carries out two of Houston's economic diversification goals—emphasizing

Houston's leadership role in the aerospace industry and providing a unique and dynamic facility to bring millions of new visitors into the community.

"I think it will allow millions and millions of people in this country and around the world to understand the significance of what is taking place here at the Johnson Space Center in Houston, Texas, and what it means for the future of our entire civilization," she said.

Stall said that in addition to using all of the artifacts already on display in the JSC visitors program—such as Mercury, Gemini and Apollo capsules, the Lunar Excursion Module and Skylab trainers, the foundation is contemplating the recreation of the Apollo-era Mission Operations Control Room (MOCR) for display. The display would allow visitors to witness the actual activities that went on during lunar landings from inside Mission Control.

Some NRC suggestions already in work

(Continued from page 1)

"NASA agrees," the statement went on to say, "that additional back-up hardware, such as large structural spares used in the event such hardware is lost during manufacture, launch or assembly, may be needed. This contingency hardware would cost approximately \$200 million. However, NASA's development cost estimate for the Space Station already includes a large amount of flight-type test

hardware."

The Agency said it has based the deployment and routine resupply of the Station on a four-orbiter fleet and is confident that the current fleet is adequate to support the Station program.

NASA agreed with, and has already incorporated in its planning, many of the NRC Committee's other recommendations. NASA said it is working with other elements of the Administration and the Congress

to provide a long-range focus for the nation's space program.

NASA also said, "The NRC report points out that the Space Station represents a national commitment and NASA strongly endorses that theme. NASA believes the American people are committed to a bold and far-reaching program that will maintain U.S. leadership in the peaceful uses of outer space. The Station represents an important step that will assure our future in space."

Various liquid booster designs studied

(Continued from page 1)

thermal dynamic data generated at Marshall.

The LRB studies will evaluate various booster configurations and propellant combinations to establish potential designs. The analyses will include rigorous assessments of performance, systems safety, reliability and integration of the LRB with the current Space Transportation System and existing launch facilities, recovery and re-

usability, and both operation and development costs.

Other issues to be assessed include techniques for recovery of the liquid rocket boosters, salt water exposure damage control and cost effectiveness of recoverable versus expendable systems.

Results of the LRB studies should be available next summer to support NASA management decisions regarding possible LRB implementation as a replacement for the current

solid propellant booster system. Study results also could aid in future agency decisions regarding the planning and configurations selected for advanced launch vehicles.

Requests for proposals for LRB designs were issued in May. In addition to the two firms selected, three other firms submitted proposals: Boeing Aerospace Co., Teledyne Brown Engineering and United Technologies Corp.



TRAINING for TRAILBLAZERS

How could astronaut candidates fail to learn wilderness skills from a teacher named 'Griz'?

(Editor's note: Public Affairs Specialist Steve Nesbitt spent Aug. 30 through Sept. 3 learning outdoor lore with the newest class of astronaut candidates in northern Idaho. This is his account of the expedition.)

By Steve Nesbitt

The setting wasn't the jungles of Panama, the rain forests of Brazil or the rocky hills of Iceland, but NASA's newest class of 15 astronaut candidates learned to get by in the wilderness during recent survival training in a northern Idaho forest.

The candidates, or "ascans" as they are called around JSC, left for the training class after only a week of orientation here. The group underwent specialized training during September, learning how to take care of themselves in case they have to parachute out of an aircraft into a remote area or the water.

The wilderness survival training was conducted by the Air Force Survival School at Fairchild Air Force Base near Spokane, Wash.

Instructors with names like "Griz" imparted the essential knowledge of staying alive when you have few tools and supplies in a hostile environment during a classroom session at the base the first morning.

One instructor embellished a tale of chopping down on a goat's eyeball to extract its valuable salty fluid while another told of forcing some trainees to strip naked in the snow-covered woods so that the student would have a better appreciation of the unforgiving elements. After hearing about edible plants

—preferred to animals for food because they are "easier to sneak up on"—and learning how to use signal flares, the ascans were issued the gear they would need and boarded an Air Force bus bound for northern Idaho.

A party of survival instructors had preceded the main group by a few hours to scout a proper camp location. As we arrived, the instructors were standing along the road holding three grouse they had killed. Ascans patted their fatigue pockets for the reassuring lump that meant a hidden candy bar was still there.

The instructors had come upon the three birds along a trail and, according to the confessions of one of the hunters, had thrown rocks at the critters for about five minutes before hitting one. The dead bird's companions, not the least bit disturbed by the fatality nor suspecting any danger, continued to wander lazily about the trail until they, too, were felled by rocks.

The next two days were spent learning the basics of survival in the woods. The instructors were actually, well, instructive, and not the ogres they had led us to believe they were with most survival students. No one had to strip naked in the snow (it was hotter than 90 during the day).

The ascans and other students were divided into three camps scattered through the woods out of sight of each other to build primitive shelters and learn the art of fire-making.

Parachutes, it turns out, are useful to have around. They make good



An Air Force instructor advises Dr. Mae Jemison on techniques for directing a rescue helicopter to her position. Proper radio communications and use of a compass were emphasized in bringing aircraft overhead.

tents and sleeping bags, and are a great source of rope. They are also good for making large arrows in open areas to signal passing aircraft.

While the survival students were shown examples of snares to catch small animals and ways to collect water in plastic and on leaves, procuring food and water was not a major difficulty on this trip.

Food, aside from the grouse and a few small fish caught with sewing needles bent into fishhooks, came in the form of military rations. Dinner might be dehydrated pork patty or frankfurters (four years old and sealed in foil) along with the contents of an envelope labeled simply "bean component." Water came from a nearby clear flowing stream that was cold enough to numb your skin after a minute.

The wilderness atmosphere was broken the second day by a guy in a dove-gray Lincoln patrolling the back roads hunting grouse. How he got down that rutted, mud and sand slide that passed for a road is still a mystery.

The final morning was spent learning how to help patrolling aircraft locate you in the woods. After breaking camp and a long hike up the hill, it was time to board the bus and head for Spokane.

Once back at the base, it was considered a required part of the experience to march in to "The Final Point," the officers' drinking establishment, in full grubby and toss down a few while savoring the survival experience, dirt being the "Red Badge of Courage" to the survivalist.



Ascans watch intently as instructors demonstrate the fine art of building fires using napalm sticks or spark-generating magnesium "matches." Separating the survival school students into small camps contributed to the feeling of remoteness.



Bill Readdy prepares to cook a grouse alongside the military rations that were standard fare for survival trainees. Water treated with iodine tablets came from a nearby stream.



Strips of parachute placed in recognizable patterns in an open field help direct passing aircraft. Candidates also used signal mirrors to "flash" their make-believe rescuers (above). Heading into the woods on the first day, the candidates lug equipment and clothing down the backroads of a remote section of national forest in northern Idaho about 20 miles south of the Canadian border (right).



Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

Lease: Baywind II condo, 1 BR, upstairs, drapes, new carpet, FPL, appliances, W/D, tennis court, pool, \$295/mo. Chuck, x35402 or 488-5019 eve.

Sale: 13.5 acres, gently rolling wooded East Tx. land, front city. blacktop, near Tyler and Henderson, assumable low cost Tx. Vet. loan. McLeaish, 480-7745.

Lease: SW off Stellalink, spacious 3-2-2 brick, convenient to medical center and 610 Loop, \$600/mo. Donna, 534-2702.

Rent: Galveston Victorian Gulf-front condo, furnished, sleeps 6, 2 pools, 3 whirlpools, affordable rates. Janna, 480-5270.

Lease: University Place townhome, 1 mile to NASA, 3-2.5, 1 car garage, refrig., microwave, W/D, miniblinds. David, x32791 or 488-3768.

Sale or Lease: CLC Baywind I, 2-1.5-2 upstairs condo, large unit, storage space, balcony, W/D, fans, rec. facilities, near schools and shopping, \$330/mo, option to buy. Das, x33235 or 488-5532.

Lease: Baywind II, split design, FPL, W/D, fans, dishwasher, stove, refrig. w/ice maker, \$380/mo. plus \$200 deposit. Bill Gordon, x35169 or 487-6151.

Lease: Seafarer 1-BR townhouse, attached garage, deck overlooking golf course, FPL, vaulted ceilings, flexible lease, \$575/mo. Terry, 480-0298.

Lease: CL 2-2 condo and 2-1 condo, pools, near day care, \$300/mo. plus low deposit. Manisha, 280-9822.

Lease: Egret Bay 2-1-2 condo, W/D, FPL, fans, covered parking, storage, pools, boat ramp, 3 mi. from NASA, furniture available, \$375/mo., 1 mo. free, deposit. Sara, x32469 or 333-4751.

Rent: Mobile home, 2-1.5, setup in Twin Oak Park, League City, central A/H, \$300/mo. plus deposit. Clarence, x36848 or 482-7675.

Lease: West Galveston Island beach house, 3-2, furnished, day/week. Ed, x37686 or 482-7723.

Rent: El Dorado Way 2-2, W/D, FPL, 1000 sq. ft., no deposit w/references, \$425/mo.. Loren, x31288 or 486-4452/944-5500.

Lease: Forest Bend 2-story townhouse, 2-1.5-2, 1000 sq. ft., large kitchen w/dining, French doors, fans, refrig. w/ice maker, W/D, fenced patio, utility room. Mike, 280-2364, Sandra 280-2361 or 333-5426.

Sale: Friendswood/Forest Bend 3-2-1.5 townhouse, L.R. den, storage space, pool, corner, \$48,500. Dietz, x30213 or 333-2322.

Sale: '85 Remington mobile home, parked in San Leon, furnished 14 x 80 3-2, furnished kitchen appliances. Anna, 282-3903.

Rent: Galveston Victorian Condo, sleeps 6, fully furnished, TV, stereo, weekend rate \$99. Glen, x35665 or 280-8644.

Lease: Lake Livingston Waterfront house, 3-2, sleeps 8, fully furnished, pier, ex. fishing, skiing, swimming. James, x31407 or 482-1582.

Sale: Middlebrook, 3-2-2, new AC, FPL, fans, backed VP to PWE Forest, assume \$73,000 ARM loan. Jennifer, X38017 or 333-4149.

Sale: League City 2-acre home site. Barney, x37056 or 332-2386.

Sale: Seascape subdivision, Seabrook, 3-2-2, fenced, new carpet, vinyl siding. Susan, x36608 or 280-8006.

Lease: El Dorado Way condo, 1-1-1, W/D, appliances, fans, FPL, upstairs unit, \$300/mo. Joyce, x33148 or 337-3038.

Lease: Bacliff Villas, 3-1-1, hi. effi AC, refrig., stove, carpet, fenced, deposit, Ryborn, x30511 or 488-1301.

Sale or Lease: League City/Country-side, 3-2-2, sale \$3,500 down, assume VA loan, payments \$613, lease \$500/mo. plus deposit. Carl, x36643 or 482-3011.

Sale: 2-acre corner lot, all utilities available, 40 mi. NE of Houston in Splendora, \$2,000 down on total cost \$16,000, owner financing balance at 6%. Vincent, x34195 or 332-0047.

Rent: Bacliff, 920 Baker, mobile home lot, \$85/mo. plus \$50 deposit. Byron, x39270 or 488-1758.

Lease: 2-1 condo, 950 sq. ft. W/D included, storage, near daycare, pool, low deposit \$330/mo., available immediately. Manisha, 280-9822.

Lease: Baywind II 1 BR, downstairs corner, FPL, W/D, connections, neutral tones, custom drapes, pool, tennis courts, \$310/mo., \$50 deposit. Lea Anne, x31506 or 488-8510.

Sale or Lease: 5-2-2, Seabrook, 2160 sq. ft., FPL, custom bookcases, oak kitchen, 10 min. to JSC, CLISD, \$35,250 or lease \$650/mo., Donna, x35250 or 479-1004.

'85 Mallard motor home 35', low mileage, loaded, \$13,000 and assume note or \$47,000 cash. Earl, x32493 or 824-6009.

Cars & Trucks

'79 Ford Fairmont, V-6, 70K mi., PS/PB, 4 dr., AC, AM/FM/tape, good cond., \$1,000 OBO. Kari, x38658 or 488-8919.

'65 Chevy 4-dr. Impala, 1 owner, new tires, good cond., \$1,500. Anthony, 921-7212.

'82 Camaro Berlinetta, ex. cond., V-8, PS, PB, tilt, cruise, power windows and locks, AM/FM/tape, AC, \$4,900. Sam, x38347 or 333-9080.

'79 Cutlass Cruiser station wagon, 65K mi., new tires, AM/FM, ex. cond., x33340 or 280-9822.

'79 Mercury Cougar XR7, 72K mi., PS, PB, AC, AM/FM/tape, gray, good cond., \$2,000. Christi, 282-4978 or 480-1617.

'84 Chevy Suburban, low miles, 350 V8, dual air, AM/FM/tape, \$9,250. Richard, x31006 or 488-2597.

'82 Olds 4-dr. Delta 88, cruise, AM/FM, A/C, tilt, good cond., \$2,500. Al, x39386 or 649-5768.

'73 Ford Pinto station wagon, ex. cond., \$500. Dean, x37761 or 488-7032.

'75 Cadillac Coupe deVille, ex. cond., \$400 OBO. Dean, x37761 or 488-7032.

'77 Mustang, 4-spd. hatchback, PS, PB, \$1,000 OBO. Wade, 332-3072.

'83 Chevy Citation X-11, silver, auto, buckets, 27,000 mi., ex. cond., \$3,800. Jim, 488-4188.

'80 Chevy 4-dr Caprice Classic, PS, PB, new radial tires, tilt, 63K mi., ex. cond., \$2,200. Jim, x30296 or 488-0658.

'84 Thunderbird Turbo-Coupe, sunroof, AM/FM/tape, headlight covers, tilt wheel, cruise control, 58K mi., \$6,000. Gregg, x38845 or 338-2379.

'86 Fiero GT, 4 spd., remote alarm, loaded, 16K, asking payoff. Mark, 480-0453.

'82 VW P/U diesel, A/C, power assisted brakes, fiber glass camper cover, 63K, \$3,000. Moberth Phillip, 559-2367.

'67 Malibu Chevelle, 2 dr., Muncie 4 spd., 327 eng., new tires, ex. cond. Ron, 643-9371.

Dreamer Cab over camper, A/C, toilet, queen bed, \$1,950; with '76 Dodge King Cab pickup, \$3,900. Robert, x33534 or 471-4539.

'80 Layton 24' travel trailer, heat, A/C, bath, bunk beds, sleeps 6, \$5,500. John, 333-4374.

'86 Delta 88 Oldsmobile, red w/red velour interior, PB, PS, AC, AM/FM, 28K mi., \$9,600. Scott, x37663 or 482-7775.

'79 Datsun PU, king cab, AC, AM/FM, 61K mi. George, x32727 or 486-0772.

'79 Impala Wagon, PS, cruise, AC, luggage rack, new tires, battery and headliner, ex. cond., Beverly, x37790 or 484-4899.

'81 Honda Accord LX 5-speed, 3 dr., PS, PB, cruise, 51K, \$3500. Linda, 282-5241 or 996-1990.

'73 VW Bug, engine runs great, 2 new tires, body in bad shape, any offer over \$250. Jacobsen, x30293 or 474-3181.

'83 944 champagne-beige Porsche, sunroof, 5 spd., power windows, black bra attachment, 61K, ex. cond., \$14,500. Cindi, 282-4051 or 480-6541.

'78 Toyota Cressida station wagon, auto, AC, AM/FM, new tires and trans., \$950. Carol, 480-9102 or 488-9005 ext. 265.

'86 Jeep CJ7, PS/PB, AC, 6 cyl., hardtop, 28K mi., \$9450. David, x31470 or 554-7463.

'87 Volvo 240 DL, loaded, gold metallic, low miles, \$14,600. David, x31470 or 554-7463.

'70 Jayking 8 Pop Up Camper, AC, new top, good cond., \$1,000. Ed, x34244, 471-2542.

'79 Toyota Pickup, 5 spd., AC, AM/FM, chrome, new brakes, new interior, sunroof, ex. cond., \$2375. John, x38178 or 482-5837.

'80 Ford Fairmont, PS, PB, 4 dr., AC, AM/FM, good tires, great gas mileage, \$1,200. Shirley, x35217 or 998-8360.

'81 Volvo GLE, mint condition, leather interior, sunroof. Patsy, x39474 or 481-4239.

Boats & Planes

'79 Sunbird 16' sailboat w/trailer, 2 sails, cuddly cabin, \$1,400. Mary, 280-7303 or 480-1271.

16' Ski boat, 75HP Johnson, AM/FM, tow bar, new paint, 4 new seats, 5 new instruments, new carpet, skis included, trailer, \$2,850. Reina, x31588 or 488-1326.

14' aluminum Jon boat, good condition, \$100 OBO. Doug, x36562 or 996-6090.

'80 9.9 Evinrude, long shaft, needs repair, parts for salvage, \$250 OBO. Harvey, x35266 or 488-2754.

'79 17' Bayliner w/trailer Volvo Penta AQ 120 I/O, new carpet, skis and hydralad, \$4,500 OBO. Debbie, 282-5176 or 534-3280.

'83 18' Gemcraft low profile ski hull, 235HP Evinrude, trailer, \$4,000. Rick, 337-1031 or Robin, 282-3392.

16' Hobie Cat, two sets sails, double trapeze, hull covers, \$1,700. John, 482-6364.

'82 Grady White 220 Bimini 200 HP motor, outriggers, extra battery, Low-rane, Hummingbird, chart recorder, \$15,000 OBO. Tim, 280-5921 or 481-9162.

Cycles

Honda V65 Magna motorcycle, windshield, helmet, 4,200 mi., 4 cylinder, water cooled engine, \$3,500 OBO. Keith, x38952 or 486-5072.

Suzuki: ALT 125 3 wheel all-terrain vehicle (ATV), 5-spd. transmission, \$850. Bauch, x31309 or 333-3382.

Boy's bicycle, 24", 10 spd., ex. cond.. William, x33704 or 482-2369.

Audiovisual & Computers

Atari 2600 video game and game cartridges, \$40; 13" B/W TV, \$10. Bao Bui, x30223 or 481-6792.

Microcomputer, full page CRT, two 8" floppies, 256K RAM, power supply needs repair, \$200. Jim, x35566.

AT&T MS-DOS 3.1 w/GW basic, new, still sealed, \$30. Frank, x36221 or 333-5251.

PC Jr. w/color monitor, 300 Baud internal modem, complete docs., word processing, database, comm software, \$350; PC Jr. add-ons, Quadram Expansion Chassis, adds 384K, second DD, printer port, \$300, full 83 key keyboard, \$50, joystick, \$25. Robert, x30780 or 480-6797.

Okidata 92 Dot Matrix printer w/plug and play, IBM graphics compatible, ex. cond., \$195. Charles, x34647 or 488-4412.

Realistic Optimus 50 3-way speakers, 12" woofers, walnut veneer cabinets, ex. cond., \$100/pr.; Realistic 7 band stereo equalizer, \$30; Gone compact disc., large LP collection, classical jazz, \$50 - \$2; University 15" subwoofer, large cabinet, \$25 incl. crossovers. Musgrove, x38318 or 488-3966.

Printer TRS model 210 daisy wheel, new, was \$599, now \$250 OBO. Mains, 486-5880 or 538-1579.

Household

Kelvinator frostless refrig., 19 cu. ft., icemaker, good cond., avocado, \$200 OBO. Ethel, x36148 or 332-5830.

Queen size sleeper sofa, earth tones, arms mangled by my cats, \$200, stereo cabinet, smoked glass doors, lift up lid, \$100. Len, 483-5408 or 333-5576.

Antique school desk, chair, \$40; child's table and chairs, \$25; 2 matching kitchen chairs, \$20; heavy duty hand-built computer or microwave stand \$25; TV table w/rollers \$7.50; rubber heavy duty-3 person life raft, \$35; office chair w/chrome legs, \$15; 2 newly upholstered Spanish throne chairs, \$500; antique French bench, rose, ex. cond. Levine, 488-5564.

Bassinette w/ mattress, linens, baby blue skirt, \$20. Carla, x30181 or 538-1148.

Twin mattress and box springs, good for camphouse, \$10. Suzette, x33606.

Litton microwave, commercial type, \$50, TV stand \$10, entertainment center (5'W, 3'T), \$20. Bao Bui, x30223 or 481-6792.

Sturdy oak wood bunk beds w/ mattresses, ex. cond., \$325. Billie, x38334 or 482-4365.

French Provincial bedroom set, includes desk, night stand, double dresser w/mirror, canopy bed, box springs and mattress, sheets, \$200. Cindi, 282-4051 or 480-6541.

10' x 10' edge bound blue carpet; full size Sears mattress, \$65. Michael, 487-3972.

Sealy Posturpedic mattress, box springs, frame, king size, ex. cond., \$150 OBO. Beth, x37240 or 488-4913.

Child's captain's bed, bookcase, dresser, \$300; early American wood rocker, \$115. Mary, x36436 or 326-3354.

Bonnet white French provincial full sized canopy bed, mattresses, matching accessories. Robert, 282-3321 or 334-7521.

Queen size firm mattress/box springs, \$350; queen size mattress frame, \$20. Hansen, x38033 or 488-8977.

5 pc. dining room set, 48" x 36", med. color wood table w/12" leaf, 4 Olefin fabric seat and back chairs, \$375. Jana, 51653 or 480-5527.

2 sets of white drapes, 72" x 84", \$50; mirror, 3' x 6', \$50. Dianne, x37595 or 488-1359.

Singer sewing machine, Zig Zag model 362, selections include 5 stitch widths, 3 needle positions, 2 patterns, \$60; Sears Craftsman rotary tool, w/3 attachments, good for carving, grinding, pre-drilling, \$20. Sharon, x35505 or 480-6797.

Twin bed w/mattress, box springs, Sears sewing machine w/cabinet, good cond. Linda, x32745 or 480-3187.

61" x 30" walnut desk, \$100. Bonnie, x34407 or 930-9348.

Infant seat/carrier, ex. cond. Carla, x30181 or 538-1148.

1920s standard oak bed, mattress, box springs, \$115; Rattan loveseat, walnut, pink floral, ex. cond., \$95. Cookie, x30328 or 474-5610.

Fruitwood octagon table, 44" w/20" aporned leaf, 6 chairs, cane back w/upholstered seats, ex. cond., \$300, will sell separately; Butler's table, \$35. Norris, x37550 or 944-5818.

3' x 3' dark oak coffee table w/4 glass insets, \$100 OBO. Tammy, x38322 or 532-1789.

Executive desk and chair, top measures 35" x 70", ex. cond., \$295. Blanche, x34220 or 996-7736.

Wanted

Want: lower drive unit for 1984 70 HP. Evinrude outboard engine, will accept damaged engine if lower unit is O.K. Max, 38127 or 482-7879.

Want male or female roommate to share Friendswood home, wooded area, includes utilities, W/D, microwave, hot tub, cable TV, \$225 mo. Rowena, 31670 or 996-9249.

Want to buy electric trains. Don, 37832 or 996-1425.

Want to buy left handed women's golf clubs. George, x32727 or 486-0772.

Want non-smoking female to share 2-2 condo, 1/2 utilities plus \$50 deposit, \$200/mo., El Dorado Way. Linda, 282-4189 or 488-0766.

Want: BETA format VCR, must have freeze frame feature in working cond. Andy, x31596 or 488-5534.

Want: Divers for Maui Advanced Scuba Class, need openwater certification, tank, BC, regulator, \$65, equipment can be rented, classes begin first week in Oct. Kevin, x35551 or 485-1248.

Want: Person with experience in calligraphy to enter names and dates on award certificates. Jackson, x37149.

Want: Trade '85 motor home for 4-2-2 single floor home in CL area. Earl, x32493 or 824-6009.

Van pool from SW Houston-Missouri City area has space for 1-2 riders. Jim, x35566 or 726-0653.

Photographic

Canon G3 w/fl.7, 40mm lens, auto/manual exposure, Canolite flash case, 35mm camera, ex. cond., \$550. Dennis, x34405 or 480-5076.

Musical Instruments

Bundy Clarinet w/case, music stand, \$150. Jody, 280-2368 or 488-6917.

Stradivarius violin, very old, full size, stored in original case, instrument and bow restrung, ex. cond., \$1,000 OBO; very old accordion, ex. cond. \$500 OBO. Erwin, 485-9796 or Ethel, x36148.

Signet oboe, ex. cond. Amy, x32696.

Pets & Livestock

Darling black kitten, male, 2 1/2 months, free; light buff male cat, 1 1/2 yrs., free. Joan, x34618 or 486-1058.

4 kittens, abandoned, need home, 5 weeks old, 2 black, 2 gray, free. Jody, 280-2368 or 488-6917.

Miscellaneous

Shotgun, 12 gauge, Remington Wingmast model 870, pump action, shoulder pad, \$150. Stephen, x32530 or 326-2174.

Mint U.S. commemoratives, some duplication, \$150. Jeff, x38312 or 482-5393.

4 stock GM steel wheels, 14", 2 w/radial tires 195/75 R14; 4 Firebird hubcaps, \$60 OBO for set. Bob Adams, x32567 or 488-3314.

20 gallon aquarium w/stand and accessories. Judy, 471-3165.

Original IBMS/W w/docs, newsroom, \$12.50; newsroom clip art I, \$10; printmaster, \$10; printmaster art gallery, \$7.50; rhymes/riddles, \$2; fraction fever (pair), \$3. Dave, x32750 or 333-4852.

Craftsman 22" self-propelled mower w/rear bagger, good cond., \$125. Anthony, 921-7212.

Traverse rods, several styles and sizes, \$50; would like to buy a serger in good cond. at reasonable price. Vincent, x34195 or 332-0047.

Gibson ES-175 guitar, tailpiece needs repair, \$175; 1 gallon Glidden Spred Satin, dusty tan, #15672, \$2.50. Don, x38869 or 488-1432.

'86 Collectors series, Case XX bowie knife, \$200. Rita, x36157 or 483-6157.

1-3-4-5 woods, DZ swing WT, stiff shafts, \$80. Brent, x36456 or 486-0389.

6-spd. Raleigh bike missing, taken from Mission Control Center. Call if you see it. Jon, x37671 or 332-1473.

Christmas tree, lights, ornaments, \$100. Gary, 32244 or 538-2110.

Marlin .44 cal. magnum carbine, 10 shot, lever action, \$160; Remington 12 gauge model 870 "wingmaster" pump shot gun, \$110. Lee, 333-4786.

Wrist strap bottom timer; two sets large snorkeling fins; float w/dive flag, \$35. Kevin, 485-1248.

American Tourister luggage set, 24", tote bag, Samsonite attache, ex. cond.; trailer hitch, class I, off of '66 Chevy, will fit others. John, x30018 or 488-4487.

Library table style five drawer desk w/chair, 26" x 64" solid pipe for \$125. John, x38890 or 488-0559.

18' Mahogany boat, trailer, no motor, \$